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Takeda et al.

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(54) **MANUFACTURING METHOD OF SEMICONDUCTOR DEVICE**

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(57) **ABSTRACT**

A method of manufacturing a low power dissipation semiconductor power device is provided which is easy to perform and suitable for mass production. When a first and second conductivity-type regions are formed on a semiconductor substrate which is selectively irradiated by impurity ions, an excellent super junction is formed by controlling the ion acceleration energy and the width of each irradiated region so that the first and second conductivity-type regions may have a uniform impurity distribution and a uniform width along the direction of irradiation. Another method of manufacturing a low power dissipation semiconductor power device having an excellent super junction is provided which selectively irradiates a collimated neutron beam onto a P⁺ silicon ingot and forms an N⁺ region that has a uniform impurity distribution and a uniform width along the direction of irradiation in the P⁺ silicon ingot.

18 Claims, 5 Drawing Sheets

